

A large, semi-transparent orange map of the United States is positioned in the background, centered behind the main title text.

# Demand Response as an Alternative to Supply-side Resources

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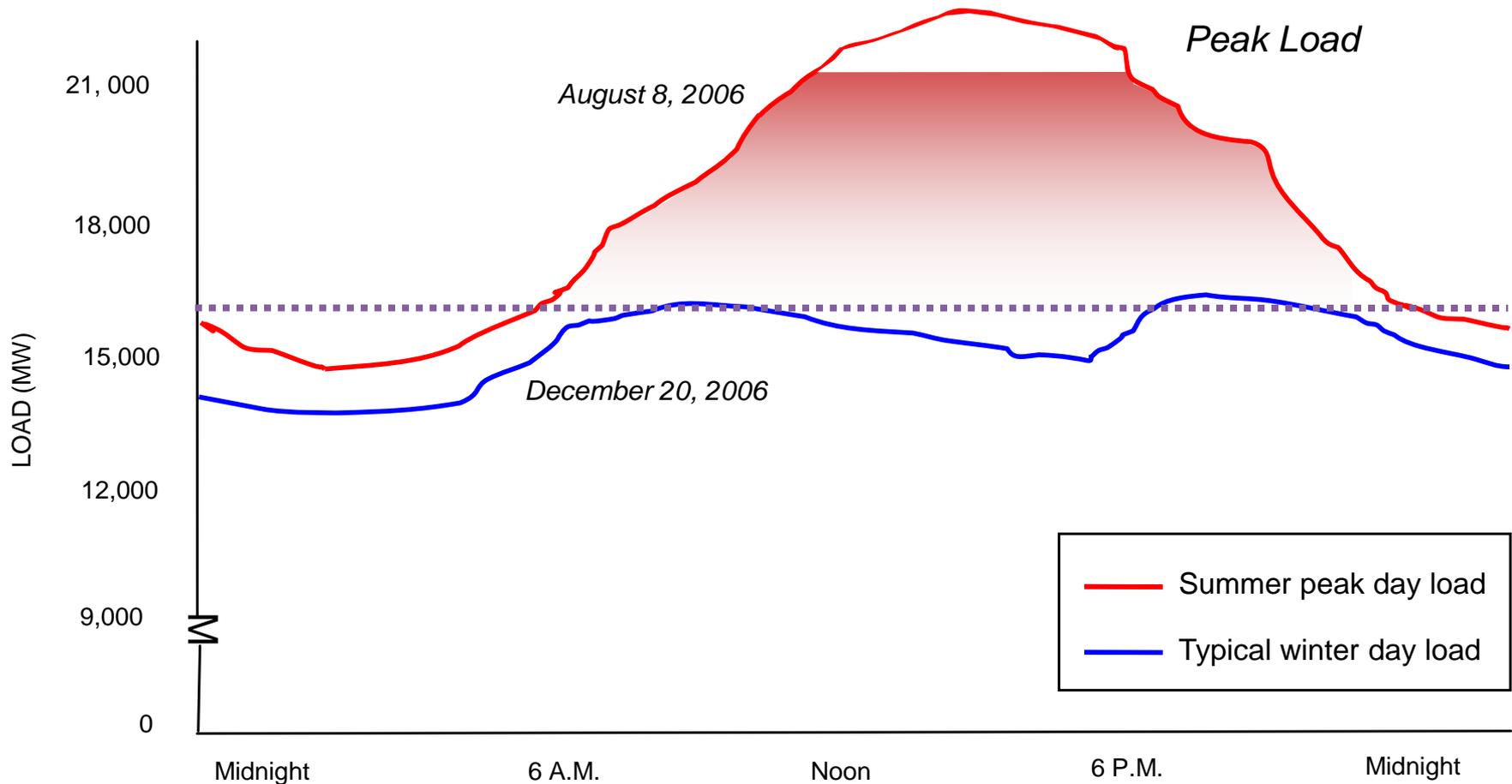
# Demand Response Defined

Demand Response (DR) refers to the reduction of customer energy usage at times of electric system peak in order to help address **grid reliability**, reflect **market conditions and pricing**, and support **infrastructure optimization or deferral**.

## Concepts Include:

- Direct Load Control
- Price Response Control
- Load Mitigation/Foregoing Voluntary Curtailment
- Applicability for all customer classes

# Electric Utility Peak Demand

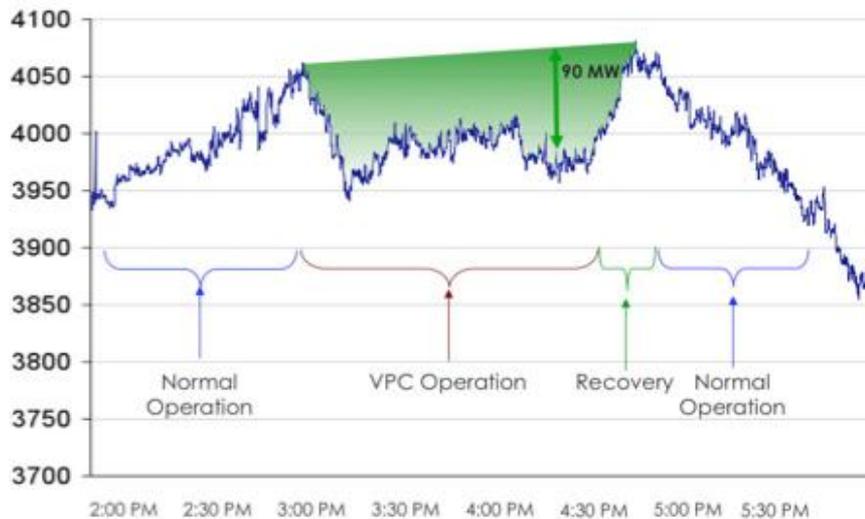


“...dangerously close to not having enough capacity.” *Walter Higgens, CEO, Sierra Pacific Resources*

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# Demand Response Requirements

✓ Timely



Utility Sheds Load: 90 MW for 2 hours

- 90 MW load reduction in 10 minutes.
- WECC recognized program as non-spinning reserve.

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# Demand Response Requirements

## ✓ Verifiable



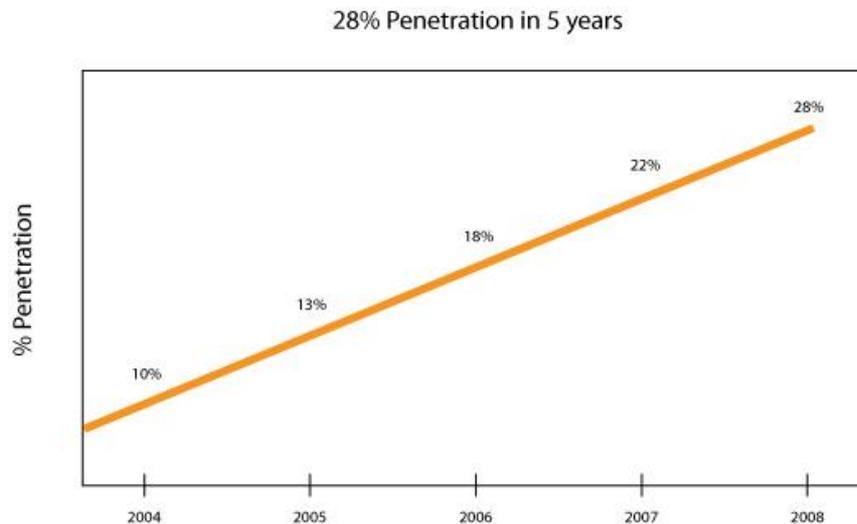
- Near-real time measurements of demand reduction
- Immediate M&V feed back to operations
- Statistically valid sampling methods
- Standards based methods

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# Demand Response Requirements

## ✓ High Customer Acceptance



- 28% of residential and small commercial customers installed in 5 years.
- 97% customers satisfaction.
- Program used for more than 100 hours in some markets.

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# Advantages over Peakers

- No siting concerns/uncertainties
  - Neighbors, Pipelines, Transmission Lines
- Distributed nature of resource - lower likelihood of loss/failure of all capacity
- Resource availability never limited by environmental conditions
- Local Employment
  - Control device installation by local HVAC contractors
  - Local program office established for build-out and beyond for maintenance and customer service

# Competitive Cost Outlook

- NJ (most areas) –Zone PJM RPM Base Residual Auction capacity price for 2013/14 = \$89 /kw-yr
- Cost of New Entry (peaker proxy?) used by PJM in clearing process for 2013-14 BRA = \$132/kw-yr

## Conclusion

**While forward PJM prices alone do not appear to support new peak power projects, they just might be sufficient to support new or expanded DR resources in most of NJ**

# Pennsylvania Act 129 as a model

- Forces utilities to achieve peak demand (MW) reductions as distinct from overall energy use (MWH) reductions.
- Encourages utilities to enroll DR programs in PJM markets to harvest revenues to offset program costs
- Monetary penalties for under-performance by utilities re EE and DR targets
- Requires competitive solicitation among qualified CSPs for almost all aspects of DR programs

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# Act 129 Improvements

- Allow utilities to forward-contract for longer period (beyond 2013)
- Reduce performance window for peak load reduction to 50 hours per summer season (vs. 100 hours now)
- Emphasize importance/advantage of pay-for-performance contracting over traditional contracting approaches; shift risks to qualified CSPs and away from utility customers

# Pay-for-Performance Puts Risk on CSP



Traditional Utility



Pay for Performance



Capital Cost

Rate base

3<sup>rd</sup> Party CSP

Performance Based (\$/MW-yr)

No

Yes

Replacement of Drop Outs

Rate base

3<sup>rd</sup> Party

System Performance Risk

Utility customers

3<sup>rd</sup> Party

Dispatch for Wholesale Market

PJM

PJM

Dispatch for T+D

Utility

Utility

Wholesale Market Price Risk

Utility customers

3<sup>rd</sup> Party

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# Conclusions

- Demand Response offers timely, verifiable capacity
- Demand Response offers value over “peakers”
- PJM prices might be sufficient to support new or expanded DR programs
- Pay for Performance contracting moves program Risk to CSP